NOTES FOR GEORGIA TECH PRESIDENT G. WAYNE CLOUGH
Georgia Tech Advisory Board Presentation on High Performance Computing, April 19, 2004

- Supercomputing, which had been eclipsed for a while by parallel processing, is experience a renaissance
    - Something of a response to Japan's Earth Simulator (2002)
    - More importantly:
        - Warning signals from federal defense, intelligence and research agencies that more computing power was needed
        - Emergence of increasing number of research problems that do not adapt well to parallel processing
    - Present surge in high-performance computer power exceeds Moore's law

- Supercomputers are the test-tubes of 21st century science
    - Simulation and modeling of large scale events like weather and atmospheric systems or nuclear explosions
    - Simulation and modeling of nanoscale behaviors
    - Manipulation of large databases like human genome
    - DOE accepts research proposals and makes awards not in the currency of dollars but in hours of time on the department's supercomputers

- Fields that depend on high performance computing have potential to drive high-end economic growth
    - Bioinformatics a $9 billion industry in 2003
    - Nanotechnology projects to exceed $1 trillion over next 10 years
    - DOE has major contract with Council on Competitiveness to examine the economic impact of high performance computing

- Where do Georgia Tech's opportunities lie?
    - The die has already been cast as to who and where the supercomputer centers of the nation will be, and we were not a player on that gameboard.
    - ORNL: Tech one of the governing universities; developing the world's most powerful computer
    - Essential to have a fast and powerful network to make optimal use of the nation's high performance computing capabilities (doesn't matter how big you make the vat at ORNL if the hose leading to GT is tiny)
    - National LambdaRail: Tech's opportunity to be a major player in the development of a high-powered network and to become the southeastern hub for this third iteration of the Internet, just as we are for Internet2

- Questions to keep in mind:
    - How can Georgia Tech improve our basic approach? Do you see any gaps?
    - What other applications should we consider 5-10-15 years down the road?
    - What is your advice as we lead the way in connecting to Europe?
    - What can we learn from the uses or experiences of your own industries?